PROPERTY PLANNING COMMON ELEMENTS

COMPONENTS OF MASTER PLANS

HABITATS AND THEIR MANAGEMENT

Prescribed Fire

Description

Overview

Prescribed fire is the intentional application of fire to a specific pre-planned area, under specific environmental conditions, to accomplish planned land management objectives. Prescribed fires are distinguished from wildfires in several key ways. Prescribed fires are set intentionally, after considering habitat management objectives and the safety of people and property, including factors like weather conditions, wind direction, and smoke management. Wildfires are unplanned and therefore uncontrolled, often occur on days where weather and fuel conditions are primed for such an event, and have the potential to do great harm to people, structures, and natural resources. Wildfires can grow to an intensity level capable of destroying an entire forest stand, whereas prescribed fires are set under conditions conducive to manageable fire intensity (e.g., flames that can top-kill low to mid-story brush and open up the understory of a woodland area).

Historical Context

Many of Wisconsin's natural communities, including prairies, oak savannas, oak and pine barrens, and sedge meadows, evolved with, and are adapted to, fire. For thousands of years prior to Euro-American settlement, wildfires swept through Wisconsin, occurring naturally through lightning strikes but likely more often deliberately set by Native Americans for a number of possible reasons (e.g., to prepare an area for settlement or create favorable habitat for food plants or game animals). Plants and animals in fire-adapted ecosystems depend on this key disturbance for their continued existence, yet these fires have been all but eliminated in Wisconsin over the past 150 years.

Fire is a natural and necessary component of ecosystems such as native prairies, savannas, and many wetland types. Periodic fire is required for regeneration and growth of fire-adapted species within these systems. Land managers are now using prescribed fire to help in restoring and maintaining these plant and animal communities, many of which are now rare and threatened.

Benefits of Prescribed Fire

Many of Wisconsin's native plants have evolved adaptations to survive in a fire-prone environment. For instance, fire-adapted prairie grasses and flowers develop deep roots and buds beneath the soil, enabling them to survive burning and to resprout quickly after fire. Plants also actively benefit from fire. For instance, by removing accumulated leaf and grass litter and invading woody plants, fire stimulates the growth of native herbaceous species, especially low-statured plants, maintaining the species diversity and open character of these systems. Fire also returns nutrients to the soil, which in turn benefits the entire plant community.

Without fire, the structure and species composition of a fire-adapted plant community can change dramatically, particularly with regards to the closing of historically more open plant communities. John Muir, for example, noted that the central Wisconsin barrens near his boyhood home went from an essentially open landscape to a young closed-canopy forest in ~25 years. Lack of fire provides opportunity for shallow-rooted and heat-sensitive plants to invade and overwhelm a site, allowing faster-growing, fire-sensitive, shade-tolerant species (e.g., maples) to outcompete slower-growing, shade-intolerant, fire-adapted species (e.g., oaks). In the absence of fire, these communities become uninhabitable to many of their characteristic species, especially those that have very specific habitat requirements. Maintaining the integrity of these plant communities is especially crucial in globally imperiled ecosystems such as pine or oak barrens and oak savannas. Conducting prescribed burns in these systems ensures their continued integrity for future generations.

Wildlife in grassland, wetland, and savanna communities also benefit from fire. Prescribed fire is rarely lethal to most wildlife, yet has a profound effect on habitat quantity and quality by increasing the extent and diversity of native species (both plants and animals) that provide food sources for wildlife. Many wildlife species that rely on open habitats for one or more stages of their life cycles, including game species like pheasant and sharp-tailed grouse as well as grassland-nesting waterfowl and songbirds, benefit from prescribed fire. Besides the reduction of encroaching woody species, prescribed burns stimulate growth of flowering herbaceous plants (forbs), which are directly consumed by many animals and also support a wide variety of insects and other invertebrates that serve as prey.

Finally, prescribed fire can help to reduce wildfire risk by reducing fuel loads in natural habitats adjacent to areas inhabited by people. This is especially important in conifer forests located close to urban areas (the "wildland-urban interface" (WUI)). Reducing fuel loads is one of the most effective elements in any fire prevention and management program. Prescribed burns that reduce brush in the mid-story of forests minimize the possibility of that brush acting as "ladder fuel" that allows fire to reach the potentially highly flammable crowns of coniferous trees. Reducing fuel loading in prairies and wetlands lessens fire intensity (flame height and rate of spread) and makes fires easier to control and suppress.

Conducting Prescribed Burns

Property master plans identify habitats and areas on properties where prescribed fire may be used as a tool to meet management objectives. All prescribed burns conducted on DNR properties are coordinated on a regional basis and tracked at the statewide level by the Division of Forestry. All prescribed burns on DNR lands follow the *Prescribed Burn Handbook* (4360.5) and the *DNR Prescribed Burn Program Implementation Plan for 2018 and Beyond*. All DNR staff that participate on prescribed burn crews receive extensive training in prescribed burning and suppression. Qualified personnel manage fire behavior using comprehensive planning and specialized fire equipment.

Prescribed fires used to meet specific management objectives are conducted under weather conditions conducive to creating the desired fire behavior (intensity), which generally coincides with wildfire season. However, the weather conditions under which prescribed burns are conducted are less extreme than those under which most wildfires typically occur, resulting in fire behavior that is easier to manage, and to suppress should the need arise.

Prescribed burning typically occurs during the early spring (March through May) and late summer/fall (September to November). These are the periods during which desirable plants and animals are less active. In the spring, this typically occurs shortly after snow has melted but before vegetation has greened up significantly. In the late summer/fall, this is typically after plant moisture levels have decreased and some hard frosts have occurred before winter precipitation. Notably, prescribed burns may become more frequent outside the traditional burn window

to help meet specific site objectives. Examples are burns during the growing season to achieve better brush kill or simply when conditions are more conducive to the objective, such as burning cat-tail marshes in mid-winter when the adjacent uplands are snow-covered.

DNR personnel prepare individual burn plans for each planned burn. A burn plan is a written document that addresses numerous important factors critical to a safe and successful burn, compiling all necessary information in one place. The plan clearly describes the existing vegetation on the burn area and the desired future condition. It spells out specific weather conditions and ignition patterns required to achieve the desired fire behavior, and addresses issues related to adjacent areas, including nearby population centers, structures, roads, and related smoke management. The plan also identifies the people and equipment needed to safely complete the burn, and includes a contingency plan (with contact information) for reacting to any emergency.

Before any burn is conducted, experienced and trained personnel assess the area to determine if weather conditions, including wind direction and speed, temperature, and relative humidity, are conducive to effectively and safely conducting the burn. In addition, staff make sure other safety considerations necessary to successfully conduct a safe burn, such as smoke management, are met. Experienced personnel review the burn area prior to the burn to assess the proximity of houses, roads, and other smoke-sensitive areas, and incorporate this into the plan. The prescribed burn occurs when favorable conditions (i.e., wind direction) minimize the amount of smoke reaching these sensitive areas. County dispatch personnel, and often local fire departments and neighbors, are notified about when and where burns will take place.